

## UPDATED INFORMATIVE DIGEST

### REGULATIONS FOR AUXILIARY DIESEL ENGINES AND DIESEL-ELECTRIC ENGINES OPERATED ON OCEAN-GOING VESSELS WITHIN CALIFORNIA WATERS AND 24 NAUTICAL MILES OF THE CALIFORNIA BASELINE

**Sections Affected:** Adoption of new section 2299.1, title 13, California Code of Regulations (CCR), and identical new section 93118, title 17, CCR (collectively “regulations”). The following documents are incorporated in the regulations by reference: (1) International Standard ISO 8217:2005(E), “Petroleum Products – Fuels (class F) – Specifications of Marine Fuels,” Third Edition, 2005-11-01; (2) International Standard ISO 8754:2003(E), “Petroleum Products – Determination of Sulfur Content – Energy-Dispersive X-Ray Fluorescence Spectrometry,” Second Edition, 2003-07-15; and (3) the following National Oceanic and Atmospheric Administration (NOAA) Nautical Charts, as authored by the NOAA Office of Coast Survey: (A) Chart 18600, Trinidad Head to Cape Blanco (January 2002), (B) Chart 18620, Point Arena to Trinidad Head (June 2002), (C) Chart 18640, San Francisco to Point Arena (August 2005), (D) Chart 18680, Point Sur to San Francisco (June 2005), (E) Chart 18700, Point Conception to Point Sur (July 2003), (F) Chart 18720, Point Dume to Purisima Point (January 2005), and (G) Chart 18740, San Diego to Santa Rosa Island (April 2005).

#### Background

Health and Safety Code (H&SC) sections 43013 and 43018 direct the Air Resources Board (ARB or Board) to adopt standards and regulations that the Board has found to be necessary, cost-effective, and technologically feasible for all mobile source categories, including off-road diesel engines and equipment such as marine vessels, through the setting of emission control requirements. Specifically, H&SC 43013 directs ARB to adopt such standards and regulations on marine vessels to the extent permitted by federal law.

The California Toxic Air Contaminant Identification and Control Program, established under California law by Assembly Bill 1807 (Stats. 1983, Ch. 1047) and set forth in H&SC sections 39650-39675, requires ARB to identify and control air toxicants in California. In 1998, the Board identified diesel particulate matter as a toxic air contaminant (TAC) with no Board-specified threshold exposure level.

Following the identification of a substance as a TAC, H&SC section 39665 requires ARB, with participation of the air pollution control and air quality management districts (districts) and in consultation with affected sources and interested parties, to prepare a report on the need and appropriate degree of regulation for that substance. Health and Safety Code section 39665(b) requires that this “needs assessment” address, among other things, the technological feasibility of proposed airborne toxic control measures (ATCMs) and the availability, suitability, and relative efficacy of substitute products or processes of a less hazardous nature.

A needs assessment for diesel PM was conducted between 1998 and 2000, which resulted in ARB's development of the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Diesel RRP). The Diesel RRP presented information that identified the available options for reducing diesel PM and recommended control measures to achieve further reductions. The scope of the Diesel RRP was broad, addressing all categories of engines, both mobile and stationary.

Once ARB has evaluated the need and appropriate degree of regulation for a TAC, H&SC section 39666(c) requires ARB to adopt regulations to reduce emissions of the TAC from nonvehicular sources to the lowest level achievable through the application of best available control technology (BACT) or a more effective control method, in consideration of cost, risk, environmental impacts, and other specified factors. In developing the proposed control measure, State law also requires an assessment of the appropriateness of substitute products or processes.

The purpose of these regulations is to reduce emissions of diesel PM, NO<sub>x</sub>, and SO<sub>x</sub>. Diesel PM emission reductions are needed to reduce the potential cancer risk and other adverse impacts from PM exposure to people who live in the vicinity of California's major ports and shipping lanes. Reductions in diesel PM, NO<sub>x</sub> (which forms "secondary" nitrate PM in the atmosphere), and SO<sub>x</sub> (which forms "secondary" sulfate PM in the atmosphere) will also contribute to regional PM reductions that will assist in California's progress toward achieving State and federal air quality standards. Reductions in NO<sub>x</sub>, an ingredient in the formation of ozone pollution, will help reduce regional ozone levels.

The regulations will provide about 2.7 tons per day (TPD) of diesel PM emission reductions in 2007 (about 3.7 TPD in 2010), about 1.9 TPD of NO<sub>x</sub> emission reductions in 2007 (about 2.3 in 2010), and about 22 TPD of SO<sub>x</sub> emission reductions (about 32 TPD in 2010) throughout California, especially in coastal urban areas. Many of these coastal areas are non-attainment for the State and federal ambient air quality standards for PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone.

On April 20, 2006, the Board approved the proposed Emission Reduction Plan for Ports and Goods Movement in California (Emission Reduction Plan). The Emission Reduction Plan is part of the broader Goods Movement Action Plan being jointly carried out by the California Environmental Protection Agency (Cal/EPA) and the Business, Transportation & Housing Agency (BT&H). Cal/EPA and BT&H's Phase 1 Action Plan released in September 2005 highlighted the air pollution impacts of goods movement and the urgent need to mitigate localized health risks in affected communities.

The Phase I Action plan established four specific goals for addressing this problem: reduce emissions to 2001 levels by 2010; continue reducing emissions until attainment of applicable standards is achieved; reduce diesel-related health risks 85% by 2020; and ensure sufficient localized risk reduction in each affected community. The draft Phase II Action Plan (February 2006) retained these goals and explicitly references the

Emission Reduction Plan as a key component. Successful implementation of the Emission Reduction Plan will depend upon measures that address all significant emission sources involved in international and domestic goods movement, including ocean-going vessels. Indeed, control measures for ocean-going vessels will serve a critical role in the success of the Emission Reduction Plan for goods movement.

### **Description of the Regulatory Action**

The regulations are designed to reduce the general public's exposure to diesel PM, other toxic contaminants, and criteria air pollutants from auxiliary engines aboard ocean-going vessels that operate within Regulated California Waters.

#### *Applicability*

The regulations apply to any person who owns, operates, charters, rents, or leases an ocean-going vessel that operates within any of the Regulated California Waters. "Regulated California Waters" include all California internal and estuarine waters and all waters within a zone about 24 nautical miles wide lying seaward of the California coastline. In general, ocean-going vessels include large cargo vessels and passenger cruise ships. The control measure applies to foreign-flagged vessels, which are vessels registered under the flag of a country other than the United States, as well as U.S.-flagged vessels.

The regulations include language explicitly stating that they do not change or supersede any existing United States Coast Guard (U.S.CG) regulations, and any person subject to the regulations is responsible for ensuring that all applicable U.S.CG regulations, as well as these regulations, are met for the vessels at issue.

#### *Exemptions*

The regulations include five exemptions. First, the proposal does not apply to vessels while they are in "continuous and expeditious navigation," which is non-stop travel within the 24 nautical mile zone off California's coastline without entering internal or estuarine waters or calling, stopping or anchoring at a port, roadstead, or terminal facility, except in limited situations such as when the vessel is in distress or must stop to comply with U.S.CG regulations. A second exemption is included for slow-speed two-stroke diesel engines. The design of these engines differs significantly from the four-stroke, medium speed engines used in virtually all auxiliary engine applications. The third exemption is for vessels owned or operated by domestic or foreign governments, while such vessels operate within Regulated California Waters on government, non-commercial service. Engines that operate using liquefied or compressed natural gas are subject to the fourth exemption.

And finally, there is an exemption that applies when the master of the vessel reasonably and actually determines that compliance with these regulations would endanger the safety of the vessel, its crew, its cargo, or its passengers because of severe weather

conditions, equipment failure, fuel contamination, or other extraordinary reasons beyond the master's reasonable control. This exemption applies only as long and to the extent necessary to secure the safety of the vessel, its crew, its cargo, or its passengers and provided the master meets specified requirements.

### *Emission Limits*

Under the regulations, the emissions of diesel PM, NO<sub>x</sub>, and SO<sub>x</sub> from a regulated auxiliary diesel engine would generally be limited to the emission rates that would have resulted had the engine been fueled with the distillate fuels identified in the proposal. Starting on January 1, 2007, vessel operators must ensure that their auxiliary engines operating in Regulated California Waters meet the first set of emission limits. One way to meet this requirement is to use marine diesel oil (MDO) with a maximum 0.5 percent sulfur by weight or use marine gas oil (MGO). Starting on January 1, 2010, vessel operators would need to ensure that their auxiliary engines operating in Regulated California Waters meet the second set of emission limits; one way to do this would be to use marine gas oil with 0.1 percent sulfur by weight.

The latter emission standard is intended to be consistent with a similar regulation adopted by the European Union. While staff believes engines can meet the emission limits associated with the 0.1 percent sulfur marine gas oil, we understand that changes in the fuels markets and ship technologies may affect the availability or use of this fuel. Therefore, the regulations include a provision directing the Executive Officer to reevaluate the feasibility and availability of the 0.1 percent sulfur marine gas oil in 2008. Based on the results of this reevaluation, modifications to this requirement may be proposed to the Board as needed.

The regulations provide built-in flexibility by specifying a performance standard (i.e., emission limits) instead of a prescriptive standard (i.e., specifying which fuels can only be used). Furthermore, the regulations include additional provisions that should help to maximize the degree of flexibility available to vessel owners and operators. As described below, persons who operate the regulated vessels would have to either comply with these emissions limits, or apply for and obtain permission from ARB to operate under one or more alternative emission control strategies (see "Alternative Compliance Plan" below). In addition, vessel operators would be allowed under specified circumstances to pay a noncompliance mitigation fee for a limited duration in lieu of meeting the emission limits. These flexibility provisions would provide vessel owners and operators with a wide choice of options to choose from to reduce their emissions.

### *Recordkeeping*

Starting on January 1, 2007, any person subject to the regulations will be required to maintain specified records in English for a minimum of three years. Staff has designed these requirements to minimize any impacts on vessel crews by relying on existing recordkeeping procedures to the extent possible.

### *Reporting, Monitoring, and Right of Entry Provisions*

The information required to be recorded, as specified in the proposal, would have to be supplied in writing to the Executive Officer, but only upon request. Some of the recordkeeping required by the regulations may already be recorded to comply with other regulations or standardized practices. In these cases, the information may be provided to ARB in a format consistent with those regulations or practices, as long as the information required under these regulations is provided. Ship owners or operators must also supply additional information as requested that may be necessary to determine compliance with the regulations.

To monitor compliance with the requirements of the regulations, vessel owners, operators, and any other person subject to the regulations would have to provide access to the vessel to ARB employees or officers. This right of entry applies to vessels within the Regulated California Waters. It includes access to records necessary to establish compliance with the regulatory requirements, as well as access to fuel tanks or pipes for the purpose of collecting fuel samples for testing and analysis.

### *Violations*

The regulations include a violations provision to clarify the actions that constitute a violation subject to penalties, injunctive relief, and other remedies available under State law. As a deterrent to noncompliance, this provision specifies that each hour of noncompliant operation will be treated as a separate violation.

### *Alternative Control of Emissions Plan*

The alternative control of emissions (ACE) plan provision allows ship owners and operators the flexibility to implement alternative emission control strategies in lieu of complying with the emission limits. Under the ACE, vessel owners or operators would be required to achieve and demonstrate equivalent or greater emission reductions over a calendar year than that which would have been achieved with direct compliance with the emission limits. Alternative emission control strategies may include any feasible and enforceable strategies not otherwise required by law, regulation or statute. These include but are not limited to the use of shore-side electrical power, engine modifications, and exhaust treatment devices (e.g., diesel oxidation catalysts). The application process is detailed, and special provisions for ships using shore-side power are included in the proposal. The regulations provide two periods for public comment and review of ACE plan applications; all documents pertaining to ACE plans will be posted on ARB's internet site for the ACE program. Finally, the regulations include provisions for Executive Officer revocation or modification of approved ACE plans under specified circumstances.

### *Noncompliance Fee*

The regulations allow a person subject to the regulations, under restricted and specified circumstances, to pay a fee in lieu of complying with the emission limits. A person using this mechanism would have to notify the Executive Officer of the vessel's noncompliance condition prior to the vessel entering regulated California waters. Also, the situations under which the fee provision could be used are limited to a finite set of five specific circumstances, all of which must be documented (i.e., a "needs" demonstration). Further, the fee increases substantially with each port visit after January 1, 2007, which serves as an effective deterrent to continued use of the fee and an incentive to make whatever changes may be needed in order to meet the emission limits.

To use this option, the ship owner or operator would need to submit the required notification and mitigation fee, along with evidence demonstrating that the person meets the required conditions for participation in the program. The mitigation fees collected under this program would be used at the ports that are visited; emission reductions from marine and port related sources would be funded with these mitigation fees to benefit nearby affected communities. The fees would be disbursed pursuant to contracts entered into between the participating ports and ARB. If there are no such agreements at the ports visited by the affected vessels, the fees would be deposited into the California Air Pollution Control Fund.

### *Test Methods and Other Incorporated Documents*

The regulations reference International Standard ISO 8217, as revised in 2005 by the International Organization for Standardization (ISO). This standard includes the properties necessary for a fuel to qualify as DMX or DMA grade fuel (marine gas oil), or DMB grade fuel (marine diesel oil), and specifies the test methods for determining compliance with each of these properties. The regulations also reference the test method (ISO 8754, as amended in 2003) to be used for determining the sulfur level of these fuels, if the use of marine gas oil or marine diesel oil is the method chosen to comply with the emission limits. The regulations allow the use of alternative test methods, such as equivalent methods adopted by ASTM International, which are demonstrated to be equally accurate and approved as such by ARB's Executive Officer.

### *Sunset Provision*

The "sunset" provision directs the Executive Officer to propose for the Board's consideration the termination of the regulations under specified conditions. This would occur if the Executive Officer determines that the International Maritime Organization or the U.S. EPA adopts regulations that will achieve equivalent or greater emission reductions from ocean-going vessels in California than the ARB regulations would achieve. This provision recognizes that, while California is authorized to regulate the emissions from ocean-going vessels, it would be preferable to regulate such emissions on a national or international basis.

### *Technology Reevaluation and Review of Baseline and Test Methods*

The regulations describe the reevaluation that will be conducted on the 2010 emission limits, which are based on the use of 0.1 percent sulfur marine gas oil. The reevaluation will look at: (1) the availability of 0.1 percent sulfur marine gas oil at bunkering ports worldwide, (2) the ability of refiners and fuel suppliers to deliver 0.1 percent sulfur fuel by January 1, 2010, (3) fuel lubricity; (4) compatibility of the 0.1 percent sulfur marine gas oil with heavy fuel oil during fuel transitions; and (5) the additional cost of 0.1 percent sulfur fuel compared to marine gas oil with other sulfur content levels. The ARB staff will conduct this reevaluation no later than July 1, 2008. If the Executive Officer determines, based on the reevaluation, that modifications to the regulations are necessary, the Executive Officer will propose changes to the Board prior to January 1, 2009 (a year prior to the implementation date of the January 1, 2010 emissions limits).

This provision also directs the Executive Officer to review the baseline determinations and conduct a public hearing to consider appropriate updates to the baseline. The definition for "Regulated California Waters" is based partly on the definition of "baseline," which generally follows the California coastline but is subject to change due to erosion and accretion. The baseline is published on official charts authored by the National Oceanic and Atmospheric Administration (NOAA); it is ARB staff's understanding that NOAA is in the process of updating these charts. When NOAA finalizes its updating efforts, the Executive Officer can determine at that time whether revisions to the regulations are necessary.

Similar to the baseline review, this provision also directs the Executive Officer to periodically review the test methods cited in the regulations and hold a public hearing to consider recommended changes to the regulations as needed.

In approving the regulations, the Board expressly delegated to the Executive Officer authority to conduct hearings to consider amendments to the NOAA charts and test methods referenced in the regulations.

### *Severability*

Each regulation states that if any part of the regulation is held to be invalid, the remainder of the regulation shall continue to be effective.

### **Comparable Federal Regulations**

There are no comparable federal regulations addressing emissions from in-use auxiliary engines on ocean-going vessels. Existing U.S. EPA regulations governing ocean-going marine vessel engines establish only modest reductions in NO<sub>x</sub> emissions, and no significant reductions in PM or SO<sub>x</sub> emissions. More importantly, those regulations only apply to new engines on U.S.-flagged vessels, while ARB's regulations apply to all in-use (existing) auxiliary engines on U.S. and foreign-flagged vessels.